



A Process for Measuring QT intervals and Constructing Composite Histograms to Compare Groups

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Abstract

A quantitative method for measuring a cardiac function interval is described as well as its application to differentiating among populations of patients. Once such populations are characterized, said method can be used as a diagnostic test for individual patients when their measured data is compared against the composite data collected by the methods herein. Beat-to-beat electrocardiographic interval data is collected over an extended period of time, such beat-to-beat data being obtained from more than one subject, the beat-to-beat interval data from each subject is then used to create a composite histogram. A series of bins representing a histogram, each of which has a value range, is defined for each subject. The collected data are organized into the bins in accordance with the value of the data and the value range of the bin, thereby creating a set of bins of each interval for each subject. A composite histogram from the set of patients is constructed by summing the data from each bin. Two composite histograms, representing two sets of observations, can then be compared using measures of central tendency, variance and outliers. This method is then applied to distinguish among populations with particular characteristics, including normal subjects persons with congenital abnormalities, and persons affected by the exposure to a pharmaceutical, toxic chemical, or other ingested or inhaled substance.